

Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Previously Presented) A connector assembly for detachably connecting a lead to an implantable medical device, comprising:

a connector block having a connector port to receive a proximal end of a lead inserted therein along an insertion axis of orientation;

a deflectable connector clip including a first arm, a second arm, and a top portion extending between the first arm and the second arm, the connector clip capable of being deflected, prior to insertion of the lead, from a first position corresponding to a first relative position of the first arm and the second arm to a second position corresponding to a second relative position of the first arm and the second arm; and

a housing mounted within the connector block, the housing having a first annular member and a second annular member, the first member formed to be fixedly engaged with the second member to form an aperture in alignment with the connector port to receive the lead proximal end along the insertion axis, the connector clip being enclosed within the housing, wherein the connector clip is positioned within one of the first member and the second member while in the second position, wherein the first arm extends from the top portion to a first end and the second arm extends from the top portion to a second end, and wherein the connector clip includes a first side wall along the first end and a second side wall along the second end, the end of the first arm and the end of the second arm being offset and partially overlapping so that the first side wall is adjacent to and engaged against the second side wall when the connector clip is in the first position, and the first arm and the second arm being partially spread apart so that the ends are non-overlapping and aligned so that the first end abuts the second end and the first side wall is not adjacent to and engaged against the second

side wall when the connector clip is in the second position, the connector clip being oriented perpendicular to the insertion axis of orientation of the proximal end of a lead such that the arms, the non-overlapping ends of the arms, and the top portion together circumscribe an opening through which the proximal end of a lead passes during insertion.

2. (Canceled)
3. (Original) The connector assembly of claim 1, wherein the housing and the connector clip are formed of an electrically conductive metal.
4. (Original) The connector assembly of claim 3, wherein the electrically conductive metal is stainless steel.
5. (Original) The connector assembly of claim 1, wherein the first member and the second member form an aperture to receive the lead, the first arm and the second arm being engaged against the lead as the lead is advanced through the aperture to further deflect the first arm and the second arm from the second position to a third position corresponding to a third relative position of the first arm and the second arm.
6. (Previously presented) The connector assembly of claim 5, wherein the first end is extended a distance outward from the second end when the connector clip is in the third position.
7. (Original) The connector assembly of claim 1, wherein the first member includes a first flange extending outward from a front surface of the first member to a first flange top portion, and the second member includes a second flange extending outward from a front surface of the second member to a second flange

top portion, the first flange top portion being fixedly engaged against the second flange top portion to enclose the connector clip within the housing.

8. (Original) The connector assembly of claim 7, wherein the first flange and the front surface of the first member form a first recessed portion and the second flange and the front surface of the second member form a second recessed portion, the connector clip being positioned within one of the first recessed portion and the second recessed portion and deflected to the second position.

9. (Original) The connector assembly of claim 8, wherein the connector clip includes a bottom portion, the first arm extending from the top portion to the bottom portion and the second arm extending from the top portion to the bottom portion, and wherein the top portion is engaged against one of the first flange and the second flange and the bottom portion is spaced from the one of the first flange and the second flange.

10. (Original) The connector assembly of claim 8, wherein the front surface of the first member and the front surface of the second member form an aperture to receive the lead within the housing, the first arm and the second arm being engaged against the lead as the lead is advanced through the aperture to further deflect the first arm and the second arm from the second position to a third position corresponding to a third relative position of the first arm and the second arm.

11. (Previously presented) The connector assembly of claim 10, wherein the first end is extended a distance outward from the second end when the connector clip is in the third position.

12. (Original) The connector assembly of claim 1, wherein the first member includes a first flange extending outward from a front surface of the first member and the second member includes a second flange extending outward from a front surface of the second member, the second flange capable of being fixedly engaged about the first flange to enclose the connector clip within the housing.
13. (Original) The connector assembly of claim 12, wherein the second member includes a third flange extending outward from the front surface of the second member, the first flange and the front surface of the first member forming a first recessed portion and the third flange and the front surface of the second member form a second recessed portion, the connector clip being positioned within one of the first recessed portion and the second recessed portion and deflected to the second position.
14. (Original) The connector assembly of claim 13, wherein the connector clip includes a bottom portion, the first arm extending from the top portion to the bottom portion and the second arm extending from the top portion to the bottom portion, and wherein the top portion is engaged against one of the first flange and the third flange and the bottom portion is spaced from the one of the first flange and the third flange.
15. (Original) The connector assembly of claim 13, wherein the front surface of the first member and the front surface of the second member form an aperture to receive the lead within the housing, the first arm and the second arm being engaged against the lead as the lead is advanced through the aperture to further deflect the first arm and the second arm from the second position to a third position corresponding to a third relative position of the first arm and the second arm.

16. (Previously Presented) The connector assembly of claim 15, wherein the first end is extended a distance outward from the second end when the connector clip is in the third position.

17. (Previously Presented) An implantable medical device capable of being detachably connected to a lead, comprising:

a connector block having a connector port to receive a proximal end of a lead inserted therein along an insertion axis of orientation;

a first deflectable connector clip including a first arm, a second arm, and a top portion extending between the first arm and the second arm, the connector clip capable of being deflected, prior to insertion of the lead, from a first position corresponding to a first relative position of the first arm and the second arm to a second position corresponding to a second relative position of the first arm and the second arm; and

a housing mounted within the connector block, the housing having a first annular member and a second annular member, the first member formed to be fixedly engaged with the second member to form an aperture in alignment with the connector port to receive the lead proximal end along the insertion axis, the connector clip being enclosed within the housing, wherein the connector clip is positioned within one of the first member and the second member while in the second position, wherein the first arm extends from the top portion to a first end and the second arm extends from the top portion to a second end, and wherein the connector clip includes a first side wall along the first end and a second side wall along the second end, the end of the first arm and the end of the second arm being offset and partially overlapping so that the first side wall is adjacent to and engaged against the second side wall when the connector clip is in the first position, and the first arm and the second arm being partially spread apart so that the ends are non-overlapping and aligned so that the first end abuts the second end and the first side wall is not adjacent to and engaged against the second side wall when the connector clip is in the second position, the connector clip

being oriented perpendicular to the insertion axis of orientation of the proximal end of a lead such that the arms, the non-overlapping ends of the arms, and the top portion together circumscribe an opening through which the proximal end of a lead passes during insertion.

18. (Canceled)

19. (Original) The device of claim 17, wherein the housing and the connector clip are formed of an electrically conductive metal.

20. (Original) The device of claim 19, wherein the electrically conductive metal is stainless steel.

21. (Original) The device of claim 17, wherein the first member and the second member form an aperture to receive the lead, the first arm and the second arm being engaged against the lead as the lead is advanced through the aperture to further deflect the first arm and the second arm from the second position to a third position corresponding to a third relative position of the first arm and the second arm.

22. (Previously presented) The device of claim 21, wherein the first end is extended a distance outward from the second end when the connector clip is in the third position.

23. (Original) The device of claim 17, wherein the first member includes a first flange extending outward from a front surface of the first member to a first flange top portion, and the second member includes a second flange extending outward from a front surface of the second member to a second flange top portion, the first flange top portion being fixedly engaged against the second flange top portion to enclose the connector clip within the housing.

24. (Original) The device of claim 23, wherein the first flange and the front surface of the first member form a first recessed portion and the second flange and the front surface of the second member form a second recessed portion, the connector clip being positioned within one of the first recessed portion and the second recessed portion and deflected to the second position.

25. (Original) The device of claim 23, wherein the connector clip includes a bottom portion, the first arm extending from the top portion to the bottom portion and the second arm extending from the top portion to the bottom portion, and wherein the top portion is engaged against one of the first flange and the second flange and the bottom portion is spaced from the one of the first flange and the second flange.

26. (Original) The device of claim 24, wherein the front surface of the first member and the front surface of the second member form an aperture to receive the lead within the housing, the first arm and the second arm being engaged against the lead as the lead is advanced through the aperture to further deflect the first arm and the second arm from the second position to a third position corresponding to a third relative position of the first arm and the second arm.

27. (Previously Presented) The device of claim 26, wherein the first end is extended a distance outward from the second end when the connector clip is in the third position.

28. (Original) The device of claim 17, wherein the first member includes a first flange extending outward from a front surface of the first member and the second member includes a second flange extending outward from a front surface of the second member, the second flange capable of being fixedly engaged about the first flange to enclose the connector clip within the housing.

29. (Original) The device of claim 28, wherein the second member includes a third flange extending outward from the front surface of the second member, the first flange and the front surface of the first member forming a first recessed portion and the third flange and the front surface of the second member form a second recessed portion, the connector clip being positioned within one of the first recessed portion and the second recessed portion and deflected to the second position.

30. (Original) The device of claim 29, wherein the connector clip includes a bottom portion, the first arm extending from the top portion to the bottom portion and the second arm extending from the top portion to the bottom portion, and wherein the top portion is engaged against one of the first flange and the third flange and the bottom portion is spaced from the one of the first flange and the third flange.

31. (Original) The device of claim 29, wherein the front surface of the first member and the front surface of the second member form an aperture to receive the lead within the housing, the first arm and the second arm being engaged against the lead as the lead is advanced through the aperture to further deflect the first arm and the second arm from the second position to a third position corresponding to a third relative position of the first arm and the second arm.

32. (Previously presented) The device of claim 31, wherein the first end is extended a distance outward from the second end when the connector clip is in the third position.

33. (Previously Presented) An implantable medical device capable of being detachably connected to a lead, comprising:

a connector block having a connector port to receive a proximal end of a lead inserted therein along an insertion axis of orientation;

a first deflectable connector clip and a second deflectable connector clip, each of the first connector clip and the second connector clip including a first arm, a second arm, and a top portion extending between the first arm and the second arm, and capable of being deflected, prior to insertion of the lead, from a first position corresponding to a first relative position of the first arm and the second arm to a second position corresponding to a second relative position of the first arm and the second arm; and

a housing mounted within the connector block, the housing having a first annular member and a second annular member, wherein the first connector clip is positioned, while in the second position, within the first annular member and the second connector clip is positioned, while in the second position, within the second annular member and oriented generally orthogonally to the first connector clip, and the first member is formed to be fixedly engaged with the second member to form an aperture in alignment with the connector port to receive the lead proximal end along the insertion axis, the first connector clip and the second connector clip being enclosed within the housing, wherein, for each of the first connector clip and the second connector clip, the first arm extends from the top portion to a first end and the second arm extends from the top portion to a second end, and wherein each of the first connector clip and the second connector clip includes a first side wall along the first end and a second side wall along the second end, the end of the first arm and the end of the second arm being offset and partially overlapping so that the first side wall is adjacent to and engaged against the second side wall when the first connector clip and the second connector clip is in the first position, and the first arm and the second arm being partially spread apart so that the ends are non-overlapping and aligned so that the first end abuts the second end and the first side wall is not adjacent to

and engaged against the second side wall when the first connector clip and the second connector clip is in the second position, each of the connector clips being oriented perpendicular the insertion axis of orientation of the proximal end of a lead such that the arms, the non-overlapping ends of the arms, and the top portion together circumscribe an opening through which the proximal end of a lead passes during insertion.

34. (Canceled)

35. (Original) The device of claim 33, wherein the housing and the first connector clip and the second connector clip are formed of an electrically conductive metal.

36. (Original) The device of claim 35, wherein the electrically conductive metal is stainless steel.

37. (Original) The device of claim 33, wherein the first member and the second member form an aperture to receive the lead, the first arm and the second arm being engaged against the lead as the lead is advanced through the aperture to further deflect the first arm and the second arm from the second position to a third position corresponding to a third relative position of the first arm and the second arm.

38. (Previously presented) The device of claim 37, wherein the first end is extended a distance outward from the second end when the first connector clip and the second connector clip is in the third position.

39. (Original) The device of claim 33, wherein the first member includes a first flange extending outward from a front surface of the first member to a first flange top portion, and the second member includes a second flange extending outward

from a front surface of the second member to a second flange top portion, the first flange top portion being fixedly engaged against the second flange top portion to enclose the first connector clip and the second connector clip within the housing.

40. (Original) The device of claim 39, wherein the first flange and the front surface of the first member form a first recessed portion and the second flange and the front surface of the second member form a second recessed portion, the first connector clip being positioned within the first recessed portion and deflected to the second position, and the second connector clip being positioned within the second recessed portion and deflected to the second position.

41. (Original) The device of claim 39, wherein the each of the first connector clip and the second connector clip include a bottom portion, the first arm extending from the top portion to the bottom portion and the second arm extending from the top portion to the bottom portion, and wherein the top portion of the first connector clip is engaged against the first flange and the top portion of the second connector clip is engaged against the second flange, and the bottom portion of the first connector clip is spaced from the first flange and the bottom portion of the second connector clip is spaced from the second flange.

42. (Original) The device of claim 40, wherein the front surface of the first member and the front surface of the second member form an aperture to receive the lead within the housing, the first arm and the second arm of each of the first connector clip and the second connector clip being engaged against the lead as the lead is advanced through the aperture to further deflect the first arm and the second arm from the second position to a third position corresponding to a third relative position of the first arm and the second arm.

43. (Previously presented) The device of claim 42, wherein the first end is extended a distance outward from the second end when the first connector clip and the second connector clip is in the third position.

44. (Original) The device of claim 33, wherein the first member includes a first flange extending outward from a front surface of the first member and the second member includes a second flange extending outward from a front surface of the second member, the second flange capable of being fixedly engaged about the first flange to enclose the first connector clip and the second connector clip within the housing.

45. (Original) The device of claim 44, wherein the second member includes a third flange extending outward from the front surface of the second member, the first flange and the front surface of the first member forming a first recessed portion and the third flange and the front surface of the second member form a second recessed portion, the first connector clip being positioned within the first recessed portion and deflected to the second position, and the second connector clip being positioned within the second recessed portion and deflected to the second position.

46. (Original) The device of claim 45, wherein each of the first connector clip and the second connector clip include a bottom portion, the first arm extending from the top portion to the bottom portion and the second arm extending from the top portion to the bottom portion, and wherein the top portion of the first connector clip is engaged against the first flange and top portion of the second connector clip is engaged against the third flange, and the bottom portion of the first connector clip is spaced from the first flange and the bottom portion of the second connector clip is spaced from the third flange.

47. (Original) The device of claim 45, wherein the front surface of the first member and the front surface of the second member form an aperture to receive the lead within the housing, the first arm and the second arm of each of the first connector clip and the second connector clip being engaged against the lead as the lead is advanced through the aperture to further deflect the first arm and the second arm from the second position to a third position corresponding to a third relative position of the first arm and the second arm.

48. (Previously presented) The device of claim 47, wherein the first end is extended a distance outward from the second end when the first connector clip and the second connector clip is in the third position.

49 – 52. (Cancelled)